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Process and apparatus for the application of glue to packaging material

Patent claims

1. Process for the application of glue, in particular glue of the hot-melt type, to packaging material transported during the application of glue, preferably to a continuous material web used for the production of blanks for packs, by means of glue nozzles (24) with closeable nozzle openings (25, 26); which are supplied with glue
5 under pressure – glue pressure – during a phase of glue application onto the packaging material, **characterized in that** the glue pressure acting on the glue can be adjusted on an individual basis as determined by the conveying speed of the packaging material or material web (21) and/or by the viscosity of the glue and/or by a desired layer thickness of the glue regions – glue areas (16) and glue
10 strips (20) – on the packaging material.

2. Process according to Claim 1, **characterized in that**, for the purpose of producing blanks with a plurality of glue regions for different tasks, in particular with glue areas (16) for the purpose of connecting edge strips (14, 15) of the blank
15 and glue strips (20) for the purpose of fixing folding tabs of an end wall, the glue regions are set in accordance with their function through the regulation of the glue pressure during a gluing cycle or during the conveying movement of the packaging material in order to achieve the desired glue layer thickness.

3. Process according to Claim 1 or 2, **characterized in that** the glue pressure and/or the opening phases of the glue nozzles (24) or of the nozzle openings (25, 26) are regulated by a common control unit, in particular by a (central) machine control unit (31).

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4. Process according to Claim 1, **characterized in that** the glue pressure is altered during a phase of glue application or during a work cycle, in particular for the purpose of generating glue regions – glue areas (16), glue strips (20) –with a different glue layer thickness.

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5. Process according to Claim 1, **characterized in that** the characteristic line of movement of the material web (21) to be glued is determined in the region of a deflection or draw roller (22) of the material web (21), preferably by a resolver (43) which is connected to the common control unit.

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6. Process according to Claim 1, **characterized in that** the material web (21) is conveyed in the region of the glue assembly (23) in a non-uniform manner, in particular in fixed-cycle operation, with the material web (21) accelerating from the standstill state to a maximum velocity, then being transported as necessary at a constant conveying speed and subsequently decelerated back to the standstill state, with the glue pressure being dynamically adjusted to the instantaneous speed by the control unit.

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7. Process according to Claim 1, **characterized by** the following features:

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a) the conveying speed of the packaging material is determined cyclically on the basis of a change in the rotation angle of the resolver (43) and converted to a velocity value,

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b) the velocity value is calculated with an algorithm stored in the control unit to arrive at an appropriate pressure value, namely glue pressure.

8. Apparatus for the application of glue, in particular glue of the hot-melt type, to packaging material transported during the application of glue, preferably to a

continuous material web (21) used for the production of glued blanks, it being possible to move the packaging material, in particular the material web (21), past a glue assembly (23) that has closeable nozzle openings (25, 26), preferably making contact with the nozzle openings (25, 26) at least during the application of glue, **characterized in that** the pressure acting on the glue within the glue assembly (23) or in the glue nozzle (24), namely the glue pressure, can be regulated as determined by the conveying speed of the packaging material or of the material web (21) and/or by the viscosity of the glue and/or by the intended thickness of the glue layer.

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9. Apparatus according to Claim 8, **characterized in that** the glue assembly (23) has as a glue nozzle (24) a slit nozzle with a plurality of slit-like nozzle openings (25, 26) which can be closed individually or in groups, preferably by means of electronically activated shut-off devices or valves (29, 30) which are assigned to each nozzle opening (26) or to a group of nozzle openings (25) and which are connected to the common control unit.

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10. Apparatus according to Claim 8 or 9, **characterized in that** the glue assembly (23) or the glue nozzle (24) is supplied with glue through a glue line (32), with a pressure control element, preferably a pressure control valve (37), being arranged in the glue line (32), in particular directly at the glue assembly (23).

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11. Apparatus according to Claim 10, **characterized in that** the pressure control valve (37) can be regulated by means of compressed air via a compressed air control unit (38), with the pressure control valve (37) or the compressed air control unit (38) being connected to the common control unit – machine control unit (31).

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12. Apparatus according to Claim 9, **characterized in that** the glue line (32) is connected to a supply of glue or glue tank (33) and is supplied with glue under high pressure by means of a glue pump (34).

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13. Apparatus according to Claim 8, **characterized in that** the conveying speed of the packaging material or of the material web (21) can be scanned in the

region of a deflection roller of the material web (21), in particular at a draw roller (42), in particular by means of a resolver (43) associated with the roller.

14. Apparatus according to Claim 8, **characterized in that** a data input device
5 is assigned to each glue assembly (23) or to a group of glue assemblies, in particular a PC (54), into which individual parameters concerning the conveying speed of the packaging material and/or glue viscosity and/or the desired layer thickness of the glue regions can be entered, with the data input device, or PC (54), being connected to the common control unit, in particular to the machine control unit (31), by means of a signal line (55).
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